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ABSTRACT

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An apparatus for changing the speed of bicycles, more particularly, an apparatus that changes the speed of bicycles using inner gears within a rear wheel hub and controls the inner gears by means of controllers mounted on a hub shaft. The apparatus includes: a driven sprocket receiving the driving force of a driving sprocket; a speed controlling portion, which includes a carrier that is fixed to one side of the driven sprocket, containing a plurality of planetary gears with ratchet-teeth formed along their inner circumferences; at least two sun gears for engaging each step of the planetary gears at their ratchet-teeth; a ring gear engaging the other side of the planetary gears; an output portion, including a hub shell transferring the driving force to the rear wheel by means of the carrier and the ring gear; a clutch means mounted between the carrier and the hub shell, and the ring gear and the hub shell, which selectively mediates the driving force; and a speed-change controlling portion. The speed-change controlling portion includes: a hub shaft having a pawl-positioning portion; at least two sets of pawls which engage with or release from the ratchet-teeth of the two or more sun gears; a pawl-controlling ring that controls the position of the two or more sets of pawls; a transforming disk having a groove along its outer circumference with a hooking portion at a certain position thereon, in order to transform the position of the pawl-controlling ring via a mediating portion; a spring for restoring the position of the transforming disk to its original position; and a spacing portion enabling the transforming disk to rotate freely.



Docket No.: J4-K10

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Moon-Soo Yoo)	
Serial Number :	09/735,770)	Examiner: Parekh, Ankur
Filed:	December 13, 2000)	Group Art Unit: 3681
For:	Apparatus for Changing)	South Pasadena, California
	<u>the Speed of Bicycles</u>)	August 6, 2002

REWRITTEN ABSTRACT

Honorable Commissioner of
Patents and Trademarks
Washington, D.C. 20231

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Sir:

In response to the Office Action of March 6, 2002 in respect to the above-identified Application, the Abstract has been rewritten in marked-up and clean form, both of which are attached hereto. The undersigned certifies that no new matter has thereby been introduced.

Respectfully submitted,



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CERTIFICATION UNDER 37 C.F.R. 1.10

I hereby certify that the accompanying REWRITTEN ABSTRACT is being deposited with the United States Postal Service on the date indicated below, in an envelope designated as "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10, Mailing Label Number: ET847117180US, addressed to the Assistant Commissioner for Patents, Washington, DC 20231.



Sara A. Koundakjian
August 6, 2002
(date)

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ABSTRACT

An apparatus for changing the speed of bicycles, more particularly, an apparatus [for changing speed of bicycles] that changes the speed of bicycles using inner gears [inside] within a rear wheel hub and [controlling] controls the inner gears [with] by means of controllers mounted on a hub shaft. The apparatus [is comprising] includes: a driven sprocket receiving the driving force of a driving sprocket; a speed controlling portion, which [is comprising] includes a carrier that is fixed to one side of the driven sprocket, containing a plurality of planetary gears with ratchet-teeth formed along their inner circumferences [is installed]; at least two sun gears [that are] for engaging [with] each step of the planetary gears [and] at their ratchet-teeth [is formed along inner circumference]; a ring gear [that is] engaging [with] the other side of the planetary gears; an output portion, [which is comprising] including a hub shell transferring the driving force to [a] the rear wheel by means of the carrier and the ring gear; a clutch means mounted between the carrier and the hub shell, and the ring gear and the hub shell, [that is mediating] which selectively mediates the driving force [selectively with being mounted between the carrier and the hub shell, and the ring gear and the hub shell]; and a speed-change controlling portion[, which is comprising] The speed-change controlling portion includes: a hub shaft having a pawl-positioning portion; at least two sets of pawls which [are engaging or releasing] engage with or release from the ratchet-teeth of the [t least] two or more sun gears; a pawl-controlling ring that [is controlling] controls the position of the [at least] two [set] or more sets of pawls; a transforming disk having a groove along its outer circumference[, that a] with a hooking portion [is formed] at a certain position [on the outer circumference] thereon, in order to transform the position of the pawl-controlling ring via a mediating portion; a spring [that is] for restoring the position of the transforming disk to its original position; and a spacing portion enabling the transforming disk to rotate freely.